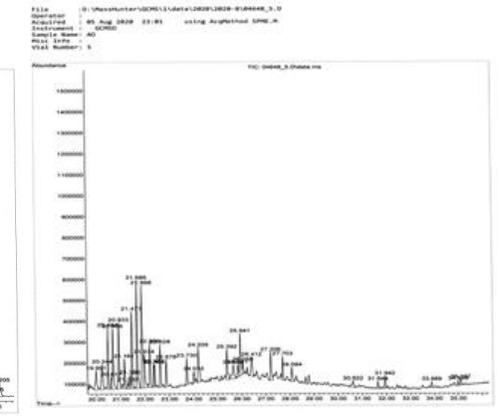
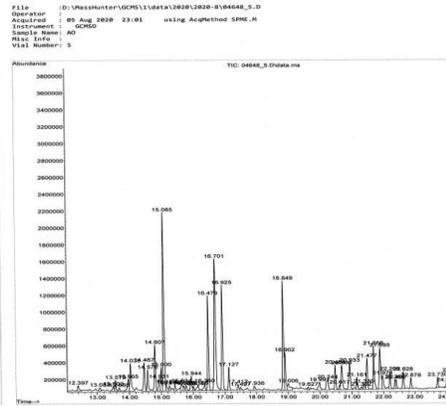
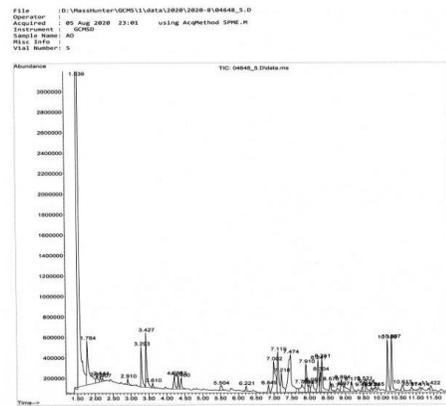
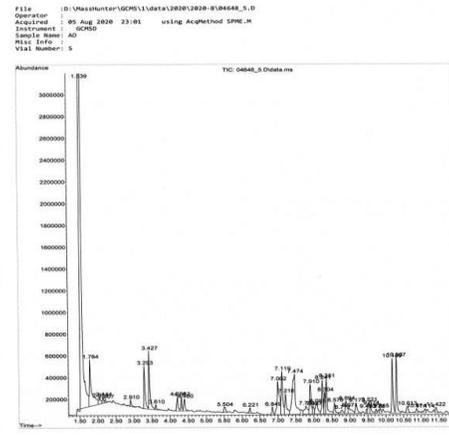
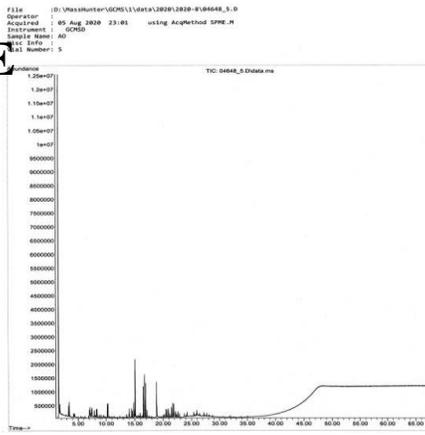
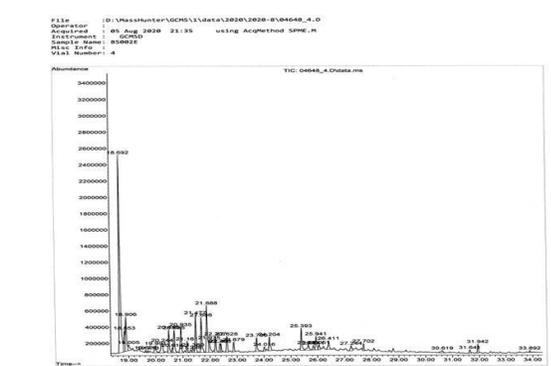
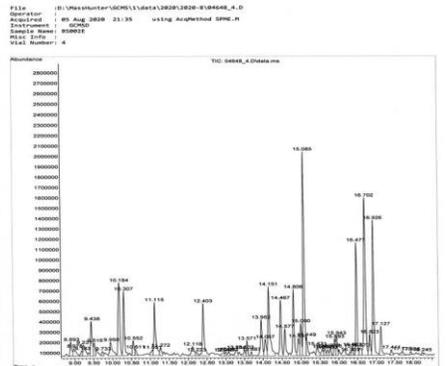
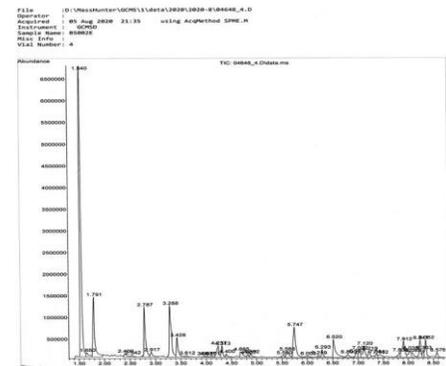
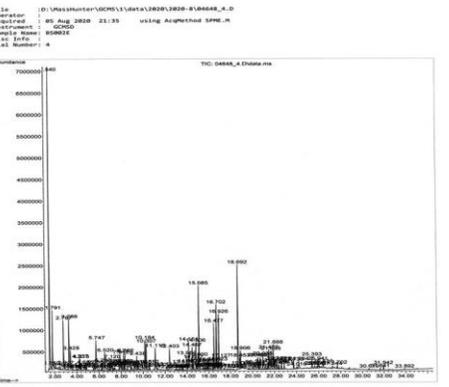
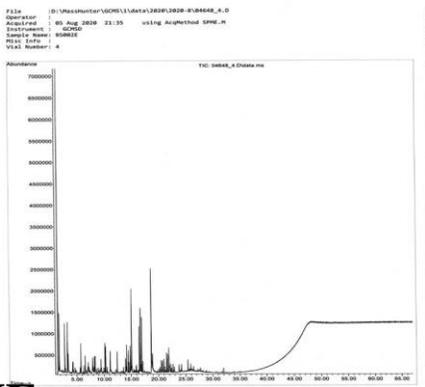


Supplementary Figure 1. GC-MS analysis of AOE, BSO2E, KME, LPE and ROE

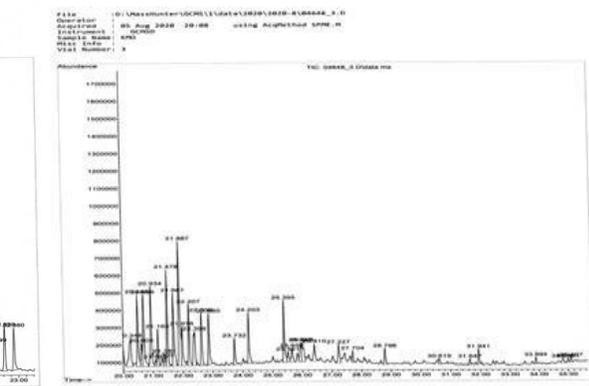
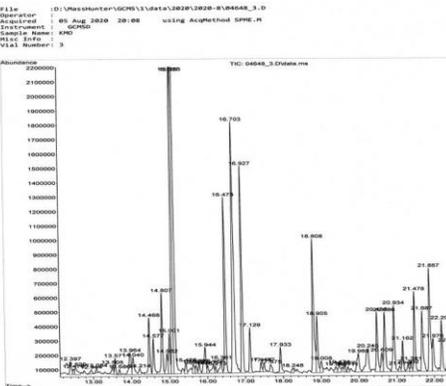
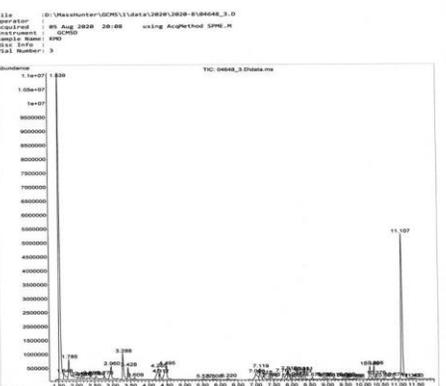
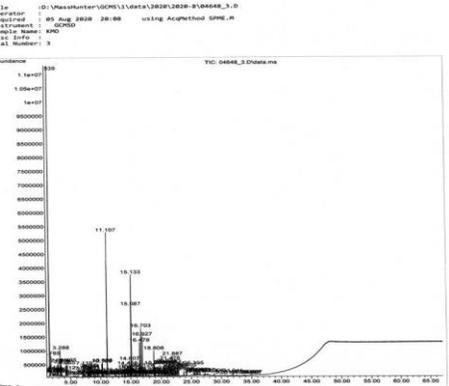
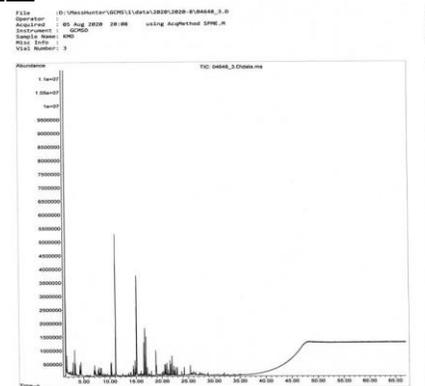
AOE



BSO2E

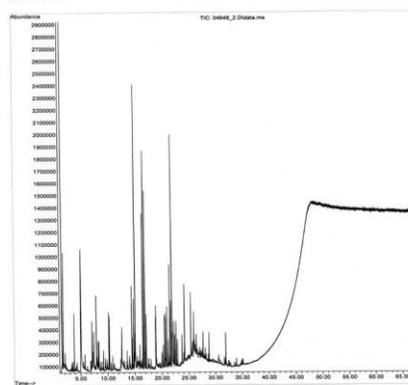


KME

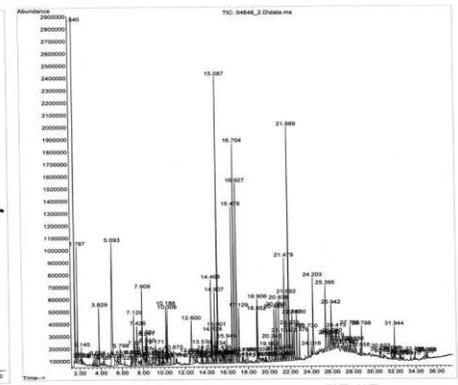


LPE

File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_3.D
Operator: [blank]
Acquired: 05 Aug 2020 18:42 using AcqMethod SPME_M
Instrument: GC900
Sample Name: LP 100
File Size: [blank]
Vial Number: 2

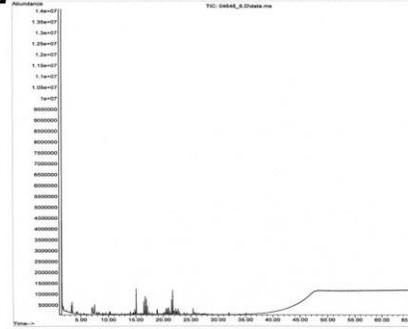


File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_3.D
Operator: [blank]
Acquired: 05 Aug 2020 18:42 using AcqMethod SPME_M
Instrument: GC900
Sample Name: LP 100
File Size: [blank]
Vial Number: 2

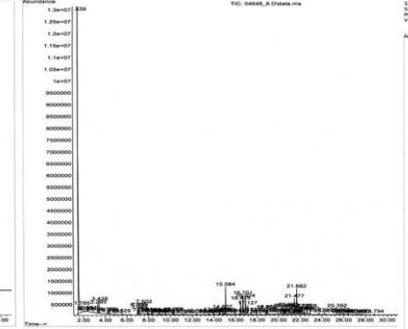


ROE

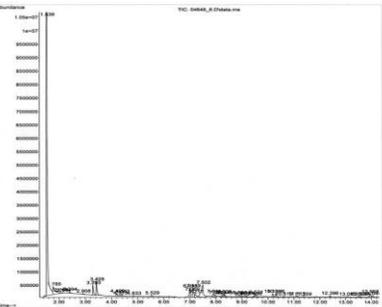
File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_6.D
Operator: [blank]
Acquired: 06 Aug 2020 00:28 using AcqMethod SPME_M
Instrument: GC900
Sample Name: RD
File Size: [blank]
Vial Number: 6



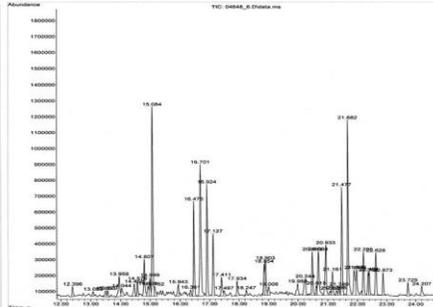
File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_6.D
Operator: [blank]
Acquired: 06 Aug 2020 00:28 using AcqMethod SPME_M
Instrument: GC900
Sample Name: RD
File Size: [blank]
Vial Number: 6



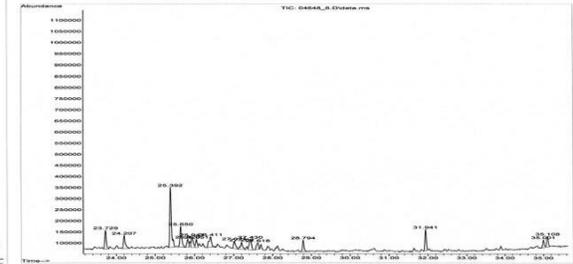
File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_6.D
Operator: [blank]
Acquired: 06 Aug 2020 00:28 using AcqMethod SPME_M
Instrument: GC900
Sample Name: RD
File Size: [blank]
Vial Number: 6



File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_6.D
Operator: [blank]
Acquired: 06 Aug 2020 00:28 using AcqMethod SPME_M
Instrument: GC900
Sample Name: RD
File Size: [blank]
Vial Number: 6



File: D:\MassHunter\GCMS1\data\2020\2020-8\84648_6.D
Operator: [blank]
Acquired: 06 Aug 2020 00:28 using AcqMethod SPME_M
Instrument: GC900
Sample Name: RD
File Size: [blank]
Vial Number: 6



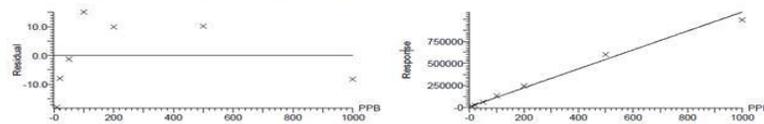
Supplementary Figure 2. Quantification of avenanthramides A, B and C. A) Standard curve. B) AOE, ROE, BSOOE, KME and LPE

A)

Avenanthramide Standard curve

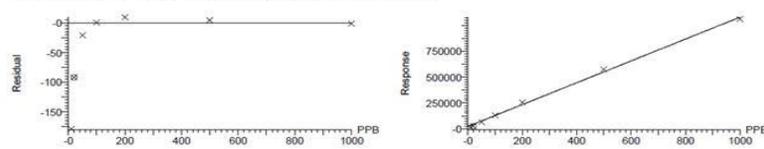
Avenanthramide A

Compound name: A-A
 Correlation coefficient: $r = 0.994872$, $r^2 = 0.989771$
 Calibration curve: $1076.28 \cdot x + 6659.64$
 Response type: External Std, Area
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



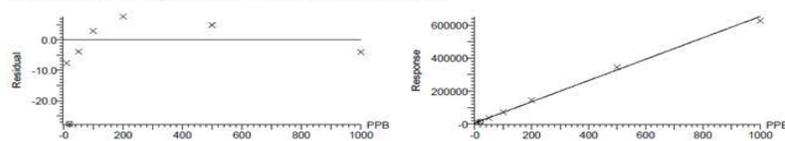
Avenanthramide B

Compound name: A-B
 Correlation coefficient: $r = 0.998920$, $r^2 = 0.997840$
 Calibration curve: $1054.46 \cdot x + 24181.5$
 Response type: External Std, Area
 Curve type: Linear, Origin: Exclude, Weighting: Null, Axis trans: None



Avenanthramide C

Compound name: A-C
 Correlation coefficient: $r = 0.998700$, $r^2 = 0.997402$
 Calibration curve: $648.898 \cdot x + 5267.86$
 Response type: External Std, Area
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



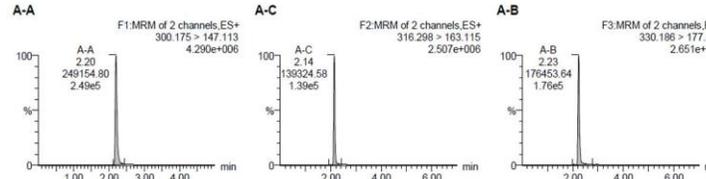
B)

AOE

Quantify Sample Report MassLynx V4.2 SCN977

Dataset: C:\MassLynx\2020.PRO\2020-08175.qld
 Last Altered: Tuesday, October 27, 2020 10:26:57 Korea Standard Time
 Printed: Tuesday, October 27, 2020 10:28:49 Korea Standard Time

Name: 08175-AO, Date: 26-Oct-2020, Time: 18:00:45, ID: , Description:



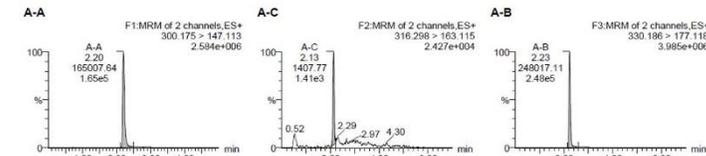
#	Name	Trace	RT	Area	IS Area	Response	Primar...	PPB	%Dev
1	1 A-A	300.175 > 147.113	2.20	249154.797		249154.797	bb	225.3	
2	2 A-C	316.298 > 163.115	2.14	139324.578		139324.578	bb	206.6	
3	3 A-B	330.186 > 177.118	2.23	176453.641		176453.641	bb	144.4	

BS002E

Quantify Sample Report MassLynx V4.2 SCN977

Dataset: C:\MassLynx\2020.PRO\2020-08175.qld
 Last Altered: Tuesday, October 27, 2020 10:26:57 Korea Standard Time
 Printed: Tuesday, October 27, 2020 10:28:49 Korea Standard Time

Name: 08175-BS002E, Date: 26-Oct-2020, Time: 17:37:25, ID: , Description:



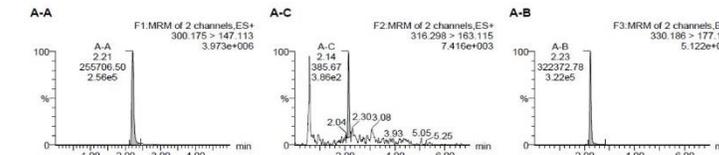
#	Name	Trace	RT	Area	IS Area	Response	Primar...	PPB	%Dev
1	1 A-A	300.175 > 147.113	2.20	165007.641		165007.641	bb	147.1	
2	2 A-C	316.298 > 163.115	2.13	1407.768		1407.768	bb		
3	3 A-B	330.186 > 177.118	2.23	248017.109		248017.109	bb	212.3	

KME

Quantify Sample Report MassLynx V4.2 SCN977

Dataset: C:\MassLynx\2020.PRO\2020-08175.qld
 Last Altered: Tuesday, October 27, 2020 10:26:57 Korea Standard Time
 Printed: Tuesday, October 27, 2020 10:28:49 Korea Standard Time

Name: 08175-KMO, Date: 26-Oct-2020, Time: 17:52:58, ID: , Description:



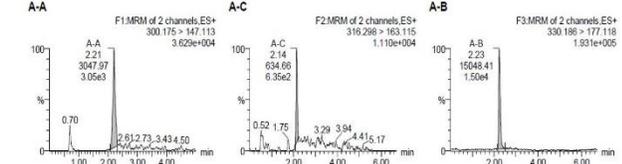
#	Name	Trace	RT	Area	IS Area	Response	Primar...	PPB	%Dev
1	1 A-A	300.175 > 147.113	2.21	255706.500		255706.500	bb	231.4	
2	2 A-C	316.298 > 163.115	2.14	385.674		385.674	bb		
3	3 A-B	330.186 > 177.118	2.23	322372.761		322372.761	bb	282.8	

ROE

Quantify Sample Report MassLynx V4.2 SCN977

Dataset: C:\MassLynx\2020.PRO\2020-08175.qld
 Last Altered: Tuesday, October 27, 2020 10:26:57 Korea Standard Time
 Printed: Tuesday, October 27, 2020 10:28:49 Korea Standard Time

Name: 08175-RO, Date: 26-Oct-2020, Time: 18:08:34, ID: , Description:



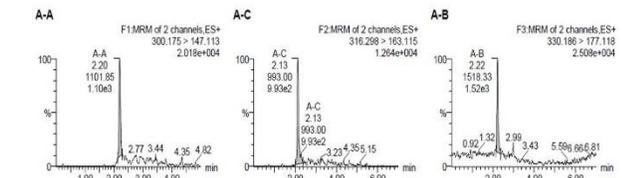
#	Name	Trace	RT	Area	IS Area	Response	Primar...	PPB	%Dev
1	1 A-A	300.175 > 147.113	2.21	3047.965		3047.965	bb		
2	2 A-C	316.298 > 163.115	2.14	634.661		634.661	bb		
3	3 A-B	330.186 > 177.118	2.23	15048.410		15048.410	bb		

LPE

Quantify Sample Report MassLynx V4.2 SCN977

Dataset: C:\MassLynx\2020.PRO\2020-08175.qld
 Last Altered: Tuesday, October 27, 2020 10:26:57 Korea Standard Time
 Printed: Tuesday, October 27, 2020 10:28:49 Korea Standard Time

Name: 08175-LPE, Date: 26-Oct-2020, Time: 17:45:12, ID: , Description:



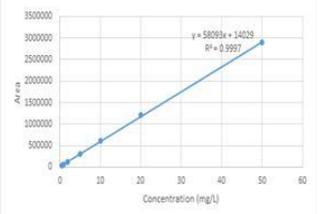
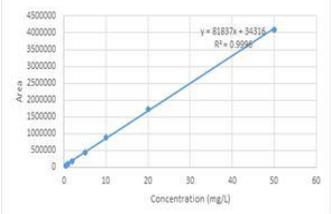
#	Name	Trace	RT	Area	IS Area	Response	Primar...	PPB	%Dev
1	1 A-A	300.175 > 147.113	2.20	1101.854		1101.854	bb		
2	2 A-C	316.298 > 163.115	2.13	993.000		993.000	bb		
3	3 A-B	330.186 > 177.118	2.22	1518.325		1518.325	bb		

Supplementary Figure 3. Quantification of coumaric acid, caffeic acid, ferulic acid and canillin quantification. A) Standard curve. B) AOE, ROE, BSOOE, KME and LPE

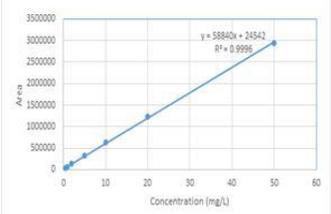
and LPE

A)

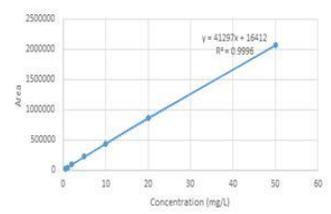
Standard curve for coumaric acid Standard curve for caffeic acid



Standard curve for ferulic acid



Standard curve for vanillin



B)

AOE

LabSolutions Analysis Report

<Sample Information>
 Sample Name: AOE
 Sample ID: AOE
 Data Filename: AOE.kd
 Method Filename: 08919M.km
 Batch Filename: 08919b.lcb
 Vial #: 124
 Injection Volume: 10 µL
 Date Acquired: 2020-10-27 8:59:48
 Date Processed: 2020-10-27 10:00:18
 Sample Type: Unknown
 Acquired by: System Administrator
 Processed by: System Administrator

<Chromatogram>
 PDA Ch1 310nm

<Peak Table>
 PDA Ch1 310nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	32.194	14848	761	0.340	mg/L		Coumaric
Total		14848	761				

PDA Ch1 325nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	42.576	30382	1509	0.293	mg/L		Caffeic
2	36.507	14619	660	0.171	mg/L		Ferulic
Total		44991	2169				

ROE

LabSolutions Analysis Report

<Sample Information>
 Sample Name: ROE
 Sample ID: ROE
 Data Filename: ROE.kd
 Method Filename: 08919M.km
 Batch Filename: 08919b.lcb
 Vial #: 125
 Injection Volume: 10 µL
 Date Acquired: 2020-10-27 9:05:15
 Date Processed: 2020-10-27 10:05:10
 Sample Type: Unknown
 Acquired by: System Administrator
 Processed by: System Administrator

<Chromatogram>
 PDA Ch1 310nm

<Peak Table>
 PDA Ch1 310nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	32.185	4937	259	0.363	mg/L		Coumaric
Total		4937	259				

PDA Ch1 325nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	36.510	12791	642	0.200	mg/L		Ferulic
Total		12791	642				

BSO02E

LabSolutions Analy

<Sample Information>
 Sample Name: BSO02E
 Sample ID: BSO02E
 Data Filename: BSO02E.kd
 Method Filename: 08919M.km
 Batch Filename: 08919b.lcb
 Vial #: 124
 Injection Volume: 10 µL
 Date Acquired: 2020-10-27 5:23:25
 Date Processed: 2020-10-27 9:59:37
 Sample Type: Unknown
 Acquired by: System Administrator
 Processed by: System Administrator

<Chromatogram>
 PDA Ch1 310nm

<Peak Table>
 PDA Ch1 310nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	30.412	16251	799	0.094	mg/L		Vanillic
2	32.295	9919	563	0.266	mg/L		Coumaric
3	32.097	4919	358	0.000			
Total		30989	1717				

PDA Ch1 325nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	36.502	18201	1068	0.142	mg/L		Ferulic
Total		18201	1068				

KME

LabSolutions Analysis Report

<Sample Information>
 Sample Name: KME
 Sample ID: KME
 Data Filename: KME.kd
 Method Filename: 08919M.km
 Batch Filename: 08919b.lcb
 Vial #: 124
 Injection Volume: 10 µL
 Date Acquired: 2020-10-27 7:14:20
 Date Processed: 2020-10-27 10:00:06
 Sample Type: Unknown
 Acquired by: System Administrator
 Processed by: System Administrator

<Chromatogram>
 PDA Ch1 310nm

<Peak Table>
 PDA Ch1 310nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	32.303	1542	114	0.395	mg/L		Vanillic
2	32.713	29260	1627	0.091	mg/L		Coumaric
3	32.610	6418	385	0.000			
Total		37280	2246				

PDA Ch1 325nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	36.504	45247	2642	0.351	mg/L		Ferulic
Total		45247	2642				

LPE

LabSolutions Analysis Report

<Sample Information>
 Sample Name: LPE
 Sample ID: LPE
 Data Filename: LPE.kd
 Method Filename: 08919M.km
 Batch Filename: 08919b.lcb
 Vial #: 124
 Injection Volume: 10 µL
 Date Acquired: 2020-10-27 8:18:53
 Date Processed: 2020-10-27 9:59:51
 Sample Type: Unknown
 Acquired by: System Administrator
 Processed by: System Administrator

<Chromatogram>
 PDA Ch1 310nm

<Peak Table>
 PDA Ch1 310nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	32.303	23953	1338	0.123	mg/L		Coumaric
2	32.611	4261	307	0.000			
Total		28214	1725				

PDA Ch1 325nm

Peak#	Ret. Time	Area	Height	Conc.	Unit	Mark	Name
1	36.510	4140	253	0.171	mg/L		Caffeic
2	36.510	58793	3644	0.530	mg/L		Ferulic
Total		58990	3897				